Grade	Strand		Standard	Days		Sub Points	Remarks
K	General	1	**COUNT OBJECTS.**	15	a	Count objects through 30; count in groups of 2, 5 and 10.	
					b	Recognize 6 through 10 as 5+1, 6+1, etc.	
					c	Write numerals 1 to 30.	
					d	Compose and decompose numbers for 2 through 10.	• e.g., 5 = 4+1 = 3+2
K	General	2	**UNDERSTAND THE NUMBERS FROM 1 THROUGH 25 AS HAVING ONE OR TWO GROUPS OF TEN AND SOME SINGLETONS. ALSO COUNT BY ONES AND BY TENS WITH OBJECTS IN 10-GROUPS.**	15			• e.g., use pennies and put in a 10 group with some loose ones left over.
							• Language is an impediment here for students, especially for the numbers from 11 to 25. Work with students so that they learn the vocabulary of numbers; 11 is "ten and one," 12 is "ten and two"; this pattern continues through all the teens; 21 is "two tens and one"; 22 is "two tens and two"' and so on.
K	General	3	**UNDERSTAND AND DESCRIBE SIMPLE ADDITION AND SUBTRACTION FOR TOTALS EQUAL TO AND LESS THAN TEN.**	15	a	Make drawings to represent situations.	• Cast as put together and take apart situations.
							• Use finger and object counting.
					b	Tell stories involving such situations.	
					c	Show equations for such situations, e.g. 7+2=9 or 10-8=2.	
K	General	4	**COMPARE NUMBERS (WHICH IS/HAS MORE/LESS/FEWER) UP TO 30.**	5			• Show students how to solve this by matching and counting.
							• Use pictograph formats to show comparing.
K	General	5	**COMPARE TWO OR MORE SETS (UP TO TEN OBJECTS IN EACH GROUP) AND IDENTIFY WHICH SET HAS THE SAME AS, MORE THAN, OR LESS THAN THE OTHER.**	5	a	Know that larger numbers describe sets with more objects in them than those in sets described by smaller numbers.	
K	General	6	**CREATE, EXPLORE AND DESCRIBE SHAPES.**	5			• Shapes should include circles, squares, equilateral triangles, and isosceles triangles, as well as common objects such as balls, school buses.
							• Compound shapes and irregular shapes should probably not be included.

Grade	Strand		Standard	Days		Sub Points	Remarks
K	General	7	IDENTIFY, SORT AND CLASSIFY OBJECTS BY ATTRIBUTE AND IDENTIFY OBJECTS THAT DO NOT BELONG IN A PARTICULAR GROUP.	5			• Use geometric shapes, attribute pieces, pattern blocks, colors, etc.
K	General	8	COMPARE THE LENGTH, WEIGHT, AND CAPACITY OF OBJECTS BY MAKING DIRECT COMPARISONS WITH REFERENCE OBJECTS (e.g., NOTE WHICH OBJECT IS SHORTER, LONGER, TALLER, LIGHTER, HEAVIER, OR HOLDS MORE.)	10			
K	General	9	DEMONSTRATE AN UNDERSTANDING OF CONCEPTS OF TIME (e.g., MORNING, AFTERNOON, EVENING, TODAY, YESTERDAY, TOMORROW, WEEK, YEAR) AND TOOLS THAT MEASURE TIME (e.g., CLOCK, CALENDAR).	10			
K	General	10	IDENTIFY THE TIME (TO THE NEAREST HOUR) OF EVERYDAY EVENTS (e.g., LUNCH TIME IS 12 O'CLOCK; BEDTIME IS 8 O' CLOCK AT NIGHT).	10			
K	General	11	CREATE, DESCRIBE, AND EXTEND SIMPLE PATTERNS.	10			• Use repeating, growing, and shrinking patterns.

Grade	Strand		Standard	Days		Sub Points	Remarks
1	**Whole Numbers**	1	**USE NUMBER NOTATION AND PLACE VALUE UP TO 100.**	21	a	Count by 1's to 100, and to 500 by 100's and 10's.	• Include completing sequences of consecutive numbers.
							• Continue counting in tens and completing a sequence.
					b	Read and write numbers up to 100 in numerals and in words.	
					c	Recognize the place values of numbers (hundreds, tens, ones).	• Have the students relate groups of ten and one to decade words e.g., relate 5 tens and 4 ones in words and objects grouped in tens to decade word (fifty four).
							• Draw quantities as groups of tens and ones.
					d	Group by fives and tens, but use standard language. See remarks under K, Standard 2.	
					e	Represent numbers up to 30 using bundles of 10 and units, and recognize that 21 = 2 tens + 1 one = 21 ones.	
1	**Whole Numbers**	2	**COMPARE SETS AND ORDER NUMBERS.**	16	a	Compare two or more sets in terms of the difference in number of elements.	• Include the concept of one-to-one correspondence, but not the terminology.
							• Include use of the phrases "equal to," "greater than," "more than," "less than," and "fewer than," but do not introduce symbols.
							• Include finding "How many more/less?"
					b	Order numbers up to 100.	• Include use of the words: greater, greatest, smaller, smallest. Be explicit about how these words relate to "greater than, more than, less than, fewer than."
							• **Exclude** use of the symbols < and >.
					c	Arrange numbers in increasing and decreasing order.	
1	**Whole Numbers**	3	**ADD AND SUBTRACT NUMBERS WITHIN 100.**	32	a	Illustrate the meaning of addition and subtraction.	• Include comparing two numbers within 20 and finding how much greater/smaller.
							• Use count-on finger and object solutions (e.g. 14 8 by counting from 8 to 14).
					b	Write out the embedded numbers (partners inside of numbers) for 2 through 10.	• e.g. 8 = 7+1 = 6+2 = 5+3 = 4+4; 10 = 8+2 = 2+8.
					c	Write mathematical statements (equations) for given situations involving addition and subtraction.	• Take verbal statements of a problem and have the student write it mathematically.

Grade	Strand		Standard	Days		Sub Points	Remarks
					d	Build up the addition facts up to 9+9, recall these facts fluently, and use in subtraction problems as well. Construct tables for addition up to 9+9.	• Include writing number stories for each number up to 10.
							• Find ways to help students memorize number facts.
							• Include statements such as the following: (I) [ ] + 2 = 7 (ii) 3 + [ ] = 12 (iii) 10 - [ ] = 6
							• **Exclude** box sums or differences which are beyond the bounds such as 9 + [ ] = 22.
					e	Recognize the inverse relationship between addition and subtraction.	• Use objects or drawings grouped in tens and ones and linked to numerical method. It is important that a clear statement like "subtraction UNDOES addition be made to the students. Since 3 + 5 = 8, we know that 8 - 3 = 5 and 8 - 5 = 3."
					f	Add and subtract numbers involving: 2-digit numbers and ones 2-digit numbers and tens 2-digit numbers and 2-digit numbers.	• **Exclude** formal algorithm.
							• Include addition/subtraction with regrouping, informally.
					g	Add 3 one-digit numbers.	
					h	Carry out simple addition and subtraction mentally involving: 2-digit number and 1-digit numbers without renaming. 2-digit number and multiples of tens.	
					i	Solve 1-step word problems using addition and subtraction.	• Use numbers within 20.
					j	Identify one more than, one less than, 10 more than, 10 less than.	
					k	Count by twos, fives and tens to 100.	

Grade	Strand		Standard	Days		Sub Points	Remarks
1	**Whole Numbers**	4	**PLACE WHOLE NUMBERS ON THE NUMBER LINE.**	5	a	Understand that numbers to the right of other numbers on the number line are bigger, and that numbers to the left of numbers on the number line are smaller.	
1	**Measurement**	5	**ESTIMATE AND MEASURE LENGTH.**	5	a	Compare the lengths of two or more objects in non-standard units (e.g., using a pencil or the student's foot as the measurement device for length).	• Include use of simple approximations to measure lengths.
							• **Exclude** finding the difference in length.
							• Include the use of the following words: long, longer, longest; short, shorter, shortest; tall, taller, tallest; high, higher, highest.
1	**Measurement**	6	**TELL TIME (12-HOUR CLOCK).**	5	a	Tell time in terms of o'clock and half past.	• **Exclude** use of 24-hour clock.
1	**Measurement**	7	**WORK WITH MONEY.**	11	a	Tell the different denominations of coins and notes.	
					b	Match one coin/note of one denomination to an equivalent set of coins/notes of another denomination.	
					c	Tell the amount of money: in cents up to $1; in dollars up to $100.	• Include use of symbols $ and ¢.
							• **Exclude** combinations of dollars and cents.
					d	Add and subtract money: in dollars only; in cents only.	
					e	Solve 1-step word problems using addition and subtraction of money: in cents only; in dollars only.	• Include finding "How much more/less?"
1	**Graphs**	8	**USE PICTURE GRAPHS.**	32	a	Read and interpret picture graphs.	• Include collecting and organizing data.
							• Include both horizontal and vertical forms.
							• Include the use of symbolic representations, e.g. ☺ represents one child.
					b	Make picture graphs of given data.	• **Exclude** picture graphs with scales such as each ☺ represents five children.
1	**Geometry**	9	**EXPLORE 2D AND 3D SHAPES IN THE WORLD.**	21	a	Become familiar with common geometric objects.	• Distinguish between physical attributes (such as color) and geometric attributes (such as shape).

Grade	Strand		Standard	Days		Sub Points	Remarks
					b	Create and describe shapes.	
					c	Use words such as above, below, in front of, behind to describe position of objects.	
1	Geometry	10	CREATE AND DESCRIBE PATTERNS.	11	a	Sort objects and create and describe patterns by number, shapes, sizes, rhythms or colors.	• Care should be taken that rules for determining the next term are accurately described, if given, and students should be aware that without explicit rules many other answers would be equally reasonable. (E.g., the next term in the sequence 2, 4, 8, ___ is not obvious; both 14 and 16 are possible answers, depending on the rule.)
					b	Distinguish between repeating and growing patterns.	
					c	Describe ways to get to a next element in simple repeating patterns.	

Grade	Strand		Standard	Days		Sub Points	Remarks
2	Whole Numbers	1	UNDERSTAND AND USE NUMBER NOTATION AND PLACE VALUE UP TO 1000.	10	a	Count to 1,000.	• Include counting in tens and hundreds.
					b	Read and write numbers up to 1,000 in numerals and in words.	• Include the use of zero as a place value and a place holder.
					c	Recognize the place values of numbers (hundreds, tens, ones).	
					d	Compare and order numbers up to 1,000.	
2	Whole Numbers	2	ADD AND SUBTRACT NUMBERS UP TO THREE DIGITS.	29	a	Add and subtract two numbers up to two digits.	• Include formal algorithms for regrouping.
					b	Add two numbers with three digits that do not require regrouping.	• Estimate the reasonableness of the answers. Students should use the associative and commutative rules for addition to simplify mental calculations and check results.
					c	Carry out addition and subtraction mentally involving: 3-digit numbers and ones; 3-digit numbers and tens; 3-digit numbers and hundreds.	
					d	Write mathematical statements for given situations involving addition and subtraction.	• Take verbal statements of a problem and have students write mathematically.
					e	Continue to find missing values in number sentences., e. g. 42 + [ ] = 57.	• Do various alternatives with different missing quantities for the basic formula a + b = c, such as [ ] +b = c or a + [ ] = c, using specific numbers.
2	Whole Numbers	3	SOLVE SIMPLE WORD PROBLEMS INVOLVING ADDITION AND SUBTRACTION.	10			
2	Whole Numbers	4	KNOW THE DEFINITION OF MULTIPLICATION AS REPEATED ADDITION. DO MULTIPLICATION AND DIVISION WITHIN THE 1, 2, 3, 4, 5, AND 10 MULTIPLICATION TABLES.	24	a	Define multiplication as the result of counting the total number of objects in equal groups, for example, 3 x 5 is the number of objects in 3 groups of 5.	• Use concrete objects to model multiplication.

Grade	Strand		Standard	Days		Sub Points	Remarks
					b	Represent multiplication using an area model.	• In the area model, it should be made clear that the unit for measurement is a square of side 1. Restrict to rectangles of integral side lengths, and have students count the number of unit squares in the rectangle or cover a rectangular grid with unit tiles to determine area.
					c	Count in steps of 2, 3, 4, 5 and 10, including starting from numbers other than 0.	
					d	Build up the facts in the 5 X 5 multiplication tables and recall fluently.	• Include activities to help pupils see that multiplication is commutative, but don't use terminology.
							• Pay special attention to multiplication by 1.
					e	Multiply by 10 and 100.	
					f	Introduce division (÷) as another way of expressing multiplication through fact families, e.g.: 2 X 3 = 6 can be rewritten as 6 ÷ 2 = 3 or 6 ÷ 3 = 2.	• Include use of division symbol.
							• Emphasize that division inverts or "undoes" multiplication.
							• Stress relationship between multiplication and division at every opportunity.
					g	Divide numbers within the multiplication tables.	• **Exclude** division with remainder.
					h	Carry out multiplication and division within multiplication tables mentally.	
2	**Numbers**	**5**	**PLACE 0 AND HALVES (1/2, 1 1/2, 2 1/2, ETC.) ON THE NUMBER LINE.**	**1**	**i**	Students should understand numbers to the left of other numbers are smaller and numbers to the right of other numbers are larger.	• Have students use the ruler as a model of the number line.
2	**Measurement**	**6**	**MEASURE LENGTH.**	**10**	**a**	Estimate and measure length in meters, centimeters, inches, feet, and yards.	• Include the use of appropriate instruments, both formal and informal, for measuring.
							• Include use of the appropriate unit and their abbreviations: cm, m, in, ft and yds.
					b	Draw and measure the perimeters of rectangles and triangles.	
							• Understand that most measurements are approximations and have errors.
2	**Measurement**	**7**	**ADD AND SUBTRACT LENGTH.**	**10**	**a**	Compare lengths.	
					b	Add and subtract lengths.	• **Exclude** conversion of units.

Grade	Strand		Standard	Days		Sub Points	Remarks
2	Measurement	8	USE A SQUARE OF SIDE ONE TO FIND THE AREA OF A SQUARE WITH WHOLE NUMBER SIDE LENGTH.	5			
2	Measurement	9	TELL TIME.	10	a	Tell and write time from the clock face and from digital clocks.	• **Exclude** cases where the minute hand is between two numbers.
							• Include reading time, e.g. read '9:15' as 'nine fifteen'; '9:50' and 'nine fifty.'
							• Include use of A.M.and P.M.
							• Include drawing hands on the clock face to show time.
							• Include use of abbreviations: h and min.
							• Include the concept of duration of time when reading time.
2	Measurement	10	ADD AND SUBTRACT MONEY.	10	a	Read and write money using decimal notation.	• E.g. $1.15
					b	Add and subtract money in mixed units (combinations of dollars and cents).	• Include making 'change.'
							• Include cases such as $2.50 + 60 cents and $5.75 - $3.
							• **Exclude** cases such as $2.50 + $3.20 and $5.75 - $2.55.
2	Measurement	11	SOLVE SIMPLE WORD PROBLEMS INVOLVING LENGTH AND MONEY.	10			
2	Graphs	12	USE PICTURE GRAPHS WITH SCALES.	10	a	Make picture graphs using a scale representation.	• Include both horizontal and vertical representations. E.g., each ☺ represents 3 children.
					b	Read and interpret picture graphs with scales.	• **Exclude** all scale factors other than 2 or 3.
					c	Solve problems using information presented in picture graphs.	• Include scales such as "each ☐ represents 2 bags."
							• **Exclude** cases involving the use of an incomplete symbolic representation such as 
2	Fractions	13	WORK WITH UNIT FRACTIONS UP TO 1/12.	10	a	Recognize, name and represent these fractions.	• Make models of the unit fractions 1/2, 1/3, 1/4, and 1/5 by folding strips.

Grade	Strand		Standard	Days		Sub Points	Remarks
					b	Compare unit fractions from 1/12 to 1/2	• Include the use of symbols: 1/2, 1/3, 1/4…….1/12.
					c	Know that when all fractional parts are included, such as four-fourths, the result is equal to the whole and to one.	• Make sure students understand that when we refer to unit fractions as equal parts of a whole, we are referring to the area of the whole that is being cut into equal parts.
							• Identify unit fractions between 1/12 and 1/2 as larger or smaller than other unit fractions in the same range.
2	**Geometry**	**14**	**IDENTIFY SHAPES.**	**14**	**a**	Identify, describe and compare triangles, rectangles, squares, circles, semi circles, spheres, and rectangular prisms.	• Help students consider examples and non-examples.
					b	Classify familiar plane and solid objects by common attributes such as color, position, shape, size, roundness, or number of corners and explain which attributes are being used for classification.	
					c	Distinguish between curves and straight lines and between curved surfaces and flat surfaces.	

Grade	Strand		Standard	Days		Sub Points	Remarks
3	Whole Numbers	1	UNDERSTAND AND USE NUMBER NOTATION AND PLACE VALUES UP TO 10,000.	9	a	Read and write numbers up to 10,000 in numerals and in words.	• Help the students understand that 4517 differs from 4217 by 300 whereas 4175 differs from 4172 by 3. On the other hand, 5222 differs from 2225 by 2997.
					b	Recognize the place values of numbers (thousands, hundreds, tens, ones).	
					c	Compare and order numbers up to 10,000.	
3	Whole Numbers	2	ADD AND SUBTRACT NUMBERS UP TO 4 DIGITS WITHOUT REGROUPING AND UP TO TWO DIGIT NUMBERS WITH REGROUPING.	6	a	Carry out addition and subtraction mentally involving two 2-digit numbers.	• Include use of terms 'sum' and 'difference.'
							• Encourage strategies for mental calculation.
					b	Write mathematical statements for given situations involving addition and subtraction.	• Take verbal statements of a problem and have students write mathematically.
					c	Estimate reasonableness of answers.	
3	Whole Numbers	3	KNOW THE MULTIPLICATION TABLES UP TO 10 x 10.	11	a	Count in steps of 2, 3, 4, 5, ….10.	• Include completing number sequences leading to multiplication tables.
					b	Build up the multiplication facts to 10 X 10 and recall fluently.	
3	Whole Numbers	4	MULTIPLY AND DIVIDE NUMBERS UP TO A 3-DIGIT NUMBER BY A 1-DIGIT NUMBER.	14	a	Express a multiplication statement in terms of division, e.g. 3 x 8 = 24 is the same as 24 ÷ 8 = 3 or 24 ÷ 3 = 8.	• Include use of the terms 'product', 'quotient', and 'remainder'.
					b	Carry out simple mental calculations.	• **Exclude:** 2-step calculations such as: find the product of 6 and the difference between 10 and 8.
							• Have students use the commutative and associative properties of multiplication.
					c	Write mathematical statements for given situations involving multiplication and division.	• Take verbal statements of a problem and have the student write it mathematically.
					d	Find missing values in number sentences. E.g. 7x [ ] = 42 or 12÷[ ] = 4.	
					e	Know that the remainder in a division is a number that is less than the divisor.	• Introduce remainder as "number left over" using familiar situations. E.g., 4 children per group; we have 25 children; how many left over?

Grade	Strand		Standard	Days		Sub Points	Remarks
3	Whole Numbers	5	KNOW AND JUSTIFY THE BASIC PROPERTIES OF ODD AND EVEN NUMBERS.	3	a	Know that even numbers end in 0, 2, 4, 6, or 8, and odd numbers end in 1, 3, 5, 7, 9. Also understand that even numbers are multiples of 2.	• Help students see why 0 is even.
					b	Work with patterns including odd and even numbers.	
3	Whole Numbers	6	SOLVE WORD PROBLEMS INVOLVING THE FOUR OPERATIONS ON WHOLE NUMBERS.	9			• Include units of measure.
3	Measurement	7	KNOW AND USE COMMON UNITS OF MEASUREMENTS IN LENGTH, WEIGHT AND TIME.	14	a	Compare the relative magnitudes of standard units: yards, feet and inches, meter and centimeter, kilogram and gram, pound and ounce, liter and milliliter, hour and minute, minute and second, year and month, month and day, year and day.	• Include use of the word "weight."
							• Include uses of abbreviations: m, cm, kg, g, l, ml, hr, min, sec, in, ft, lb and oz.
					b	Measure in mixed units within the same measurement system: for length, weight and time, e.g. 1 ft 6 in.	• Include estimating and measuring with different units.
							• Include use of the terms 'past' and 'to' such as '10 minutes past or after 5'and '15 minutes to or before 12.'
							• Mixed units involve quantities expressed, for example, one hour, ten minutes - these should be included.
3	Measurement	8	ADD AND SUBTRACT LENGTH, WEIGHT AND TIME IN MIXED UNITS.	6	a	Do only within the same measurement system.	• **Exclude** seconds.
							• Include only numbers that involve simple calculations.
3	Measurement	9	ADD AND SUBTRACT MONEY IN DOLLARS AND CENTS.	11			
3	Measurement	10	SOLVE WORD PROBLEMS INVOLVING MONEY, LENGTH, AND TIME.	9			• Include problems involving different units of measure.
							• Include problems involving concept of duration of time interval.

Grade	Strand		Standard	Days		Sub Points	Remarks
3	**Measurement**	11	**KNOW THE DEFINITION OF AREA AND PERIMETER AND CALCULATE AREA AND PERIMETER OF A SQUARE AND A RECTANGLE.**	6	**a**	Know that for area, the standard unit of measurement is a unit square, that is, a square with sides equal to one.	• Use only whole numbers for the sides of the figures.
							• Area cannot be defined until a unit has been chosen.
							• **Exclude** formulas.
					b	Use square units in calculating area by covering the object and counting the number of square units.	**Exclude** situations where the squares do not cover the area exactly.
							• A square unit is a unit square.
					c	Distinguish between units of length and area units.	• sq., cm., m., sq. in., ft., yd.
					d	Estimate the perimeter and area of a square and a rectangle in standard units.	• Include estimating and measuring perimeter.
							• Note (for teacher background only) that the language is somewhat confusing here since the word perimeter refers both to the actual external boundary of the figure as well as to a measure of its total length.
					e	Visualize and describe the relative sizes of one square inch and one square centimeter.	• **Exclude** conversion between cm^2 and in^2.
							• Include estimating area in square inches and square centimeters.
3	**Measurement**	12	**MEASURE SURFACE AREA OF SOLIDS BY COVERING AND COUNTING AREA OF A FACE.**	5			• Work with cubes.
3	**Graphs**	13	**USE BAR GRAPHS.**	6	**a**	Read scales on the axis.	• Include both horizontal and vertical representations.
					b	Determine the range of values in a graph.	
					c	Solve problems using information presented in bar graphs.	• Include comparison of bar graphs.
3	**Fractions**	14	**KNOW THAT ONCE A WHOLE HAS BEEN FIXED OR DEFINED, FRACTIONS REFER TO EQUAL PARTS OF THE WHOLE.**	2	**a**	Know that a whole is never a shape but has to be a magnitude. Thus a segment is not a whole, but its length can be one. A square is not a whole, but its area can be one.	• The representation of the whole can be the length of an interval on the number line, the area of a rectangular strip or the area of a square.

Grade	Strand		Standard	Days		Sub Points	Remarks
							• Until a whole is made explicit in context, a fraction has no meaning.
3	Fractions	15	RECOGNIZE, NAME AND USE EQUIVALENT FRACTIONS WITH DENOMINATORS 2, 4 AND 8.	8			• Include the terms 'numerator' and 'denominator.'
							• In order to understand equivalent fractions, such as 1/2 = 2/4, remind students that the whole is the unit. Without fixing the whole, equivalent fractions have no meaning.
							• Use strips.
3	Fractions	16	COMPARE AND ORDER FRACTIONS WITH DENOMINATORS 2, 4 AND 8.	6	a	Determine which is larger and which is smaller when comparing.	• Include both increasing and decreasing order.
							• Number of fractions involved should not exceed 3.
					b	Place fractions with denominators 2,4 and 8 on the number line.	
3	Fractions	17	ADD AND SUBTRACT FRACTIONS WITH THE SAME DENOMINATOR.	11	a	Know that addition and subtraction of fractions with equal denominators is the adjoining and "taking away" of successive segments on the number line.	• Emphasize the similarity of the addition and subtraction of fractions with the same operations on whole numbers.
					b	Understand that any fraction can be written as a sum of unit fractions, E.g. $\frac{3}{4}=\frac{1}{4}+\frac{1}{4}+\frac{1}{4}$	
3	Geometry	18	RECOGNIZE THE BASIC ELEMENTS OF GEOMETRIC OBJECTS.	6	a	Identify points, segments, lines, vertices, angles and distances.	
3	Geometry	19	RECOGNIZE PERPENDICULAR INTERSECTIONS AND PARALLEL LINES.	3			• Check for perpendicularity using a square corner.
3	Geometry	20	EXPLORE AND NAME FAMILIAR 2-DIMENSIONAL SHAPES.	6	a	Identify angles, sides, and vertices in 2-D shapes.	• Note (for teacher background only) that the language used here is confusing. When we use the words rectangles, squares, circles we are referring to both the contained region and the boundary itself.

Grade	Strand		Standard	Days		Sub Points	Remarks
		21			b	Describe and classify plane geometric shapes (e.g., circle, triangle, square, rectangle) according to the number of sides and vertices.	
					c	Put shapes together and take them apart to form other shapes (e.g., two congruent right triangles can be arranged to form a rectangle).	
3	Geometry	22	RECOGNIZE WHAT A PLANE IS AND WHEN 2 PLANES ARE PARALLEL TO EACH OTHER.	3			• Use examples such as the floor and ceiling of a room.
3	Geometry	23	EXPLORE AND NAME FAMILIAR 3-DIMENSIONAL SOLIDS.	6	a	Identify and locate faces, surfaces, bases, edges and vertices.	
					b	Describe and classify solid geometric shapes (e.g., sphere, pyramid, cube, rectangular prism) according to the number and shape of faces, edges, and vertices.	
					c	Build solids with cubes and represent front, top and side views.	

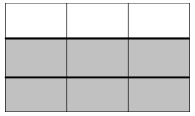
Grade	Strand		Standard	Days		Sub Points	Remarks
4	**Whole Numbers**	1	**KNOW HOW TO USE NUMBER NOTATION AND PLACE VALUES UP TO 1,000,000.**	5	a	Read and write numbers up to 1,000,000 in numerals and in words.	
					b	Recognize the place values of numbers (hundred thousands ten thousands, thousands, hundreds, tens, ones).	• Include completing sequences of consecutive numbers.
					c	Compare and order numbers up to 1,000,000.	• Emphasize order of magnitude and the role of 10 (e.g., 1,000 is tem times 100, 1,000,000 is ten times 100,000, etc.)
4	**Whole Numbers**	2	**APPROXIMATE AND ESTIMATE NUMBERS.**	5	a	Round off numbers to the nearest 10 and 100.	
					b	Estimate the answers in calculations involving addition, subtraction and multiplication.	• Include checking reasonableness of answers.
							• Use mental arithmetic.
							• Use practical examples such as shopping for several items and keeping track of an approximate total as compared to how much money you have.
					c	Know when approximation is appropriate.	• Know for example, that the population of a classroom may be counted exactly but the population of a country can only be approximated.
					d	Carry out mental calculations to estimate.	
4	**Whole Numbers**	3	**UNDERSTAND THAT MANY WHOLE NUMBERS CAN BE WRITTEN AS PRODUCTS IN MORE THAN ONE WAY; USE FACTORS AND MULTIPLES.**	10	a	Determine if a 1-digit number is a factor of a given whole number.	• **Exclude** factorization rules such as if the sum of the digits is divisible by 3, the number is divisible by three."
					b	Write numbers as products of their factors.	• For example, 12 =4x3 = 2x6 = 2x2x3.
					b	Write numbers as products of their factors.	• For example, 12 = 4x3 = 2x6 = 2x2x3.
					c	List all factors of a whole number up to 50 and list factor pairs.	• Include finding common factor of 2 numbers.
							• **Exclude** finding the greatest common factor (G.C.F.).
					d	List the first 10 multiples of a given 1-digit whole number.	• Include finding common multiple of 2 numbers.

Grade	Strand		Standard	Days		Sub Points	Remarks
					d	List the first 10 multiples of a given 1-digit whole number.	• Include finding common factor of 2 numbers.
							• Relate to counting by 2, 3, 5, etc., from earlier grades.
							• **Exclude** finding the least common multiple (L.C.M.).
					e	Determine if a whole number is a multiple of a given 1-digit whole number.	
					f	Know that numbers such as 2,3,5,7, and 11 do not have any factors except 1 and themselves and that such numbers are called prime numbers.	
4	**Whole Numbers**	**4**	**MULTIPLY NUMBERS UP TO: ANY NUMBER OF DIGITS BY A 1-DIGIT NUMBER; 3 DIGITS BY A 2-DIGIT NUMBER.**	**6**	**a**	Write mathematical statements for given situations involving such multiplications.	• Take verbal statements of a problem and have the student write it mathematically.
					b	For a 2-digit by 1-digit multiplication (use 2, 3, 4 and 5) use distributive property to develop a meaning for the algorithm.	• Help students see how the steps in the algorithm are justified using the distributive property. For example, $21\times3=(1+20)\times3=(1\times3)+(20\times3)=3+60=63$ or $\begin{array}{r} 21 \\ \times\ 3 \\ \hline 3 \\ 60 \\ \hline 63 \end{array}$
4	**Whole Numbers**	**5**	**DIVIDE NUMBERS UP TO 4-DIGITS BY A 1-DIGIT NUMBER AND BY 10.**	**6**	**a**	Write mathematical statements for given situations involving such divisions.	• Emphasize that every division statement is a rewriting of a multiplication statement: $a \div b = c$ means exactly $a = b \times c$.
					b	Find the unknowns in equations such as: $a \div 10 = 25$; $125 \div b = 25$.	• Begin to use variables to represent unknowns.
					c	Use the relationship between multiplication and division to simplify computations and to check results.	

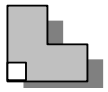
Grade	Strand		Standard	Days		Sub Points	Remarks
4	Whole Numbers	6	DEMONSTRATE AN UNDERSTANDING OF, AND THE ABILITY TO USE, STANDARD ALGORITHMS FOR MULTIPLYING A MULTI-DIGIT NUMBER BY A 2-DIGIT NUMBER AND FOR DIVIDING A MULTI-DIGIT NUMBER BY A 1-DIGIT NUMBER.	4	a	Write mathematical statements for given situations involving such multiplications and divisions.	• Take verbal statements of a problem and have the student write it mathematically.
							• Check results using calculators.
					b	Recognize and be able to explain common computational errors such as not accounting for the place value of a number.	
4	Whole Numbers	7	SOLVE WORD PROBLEMS INVOLVING WHOLE NUMBER MULTIPLICATION AND DIVISION.	5			• Include units of measure.
							• Include checking reasonableness of answers.
							• Include different problem situations with different meanings for the remainder (left over, drop left-over and increase quotient by one).
4	Measurement	8	MEASURE USING COMMON TOOLS AND SELECT APPROPRIATE UNITS WHEN MEASURING.	4	a	Give answers to reasonable degree of precision in the context of a given problem.	• For example, one does not measure the weight of a refrigerator in grams, nor the length of a desk in miles.
					b	Carry out the following conversions, and vice versa: meter to centimeter, kilogram to gram, liter to milliliter, hour to minute, minute to second, year to month, week to day, ft to in, oz to lbs.	• Include only numbers that involve simple calculations.
4	Measurement	9	USE FILLING AND COUNTING TO FIND THE VOLUME OF A CUBE AND A RECTANGULAR PRISM.	6			• Filling with liquid creates a good intuitive understanding of volume.

Grade	Strand		Standard	Days		Sub Points	Remarks
							• Include use of abbreviations: m^3, cm^3, in^3, ft^3, and yd^3.
							• Include finding the volume of the solid made up of unit cubes of given dimension.
					a	Recognize the equivalence of 1 liter/1000mL and 1000 cm^3.	• Include conversions between ℓ, ml and cm^3.
4	**Measurement**	10	**KNOW THE UNITS OF MEASURE OF VOLUME: CUBIC CENTIMETER, CUBIC METER, CUBIC INCHES, CUBIC FEET.**	3	a	Build solids with unit cubes and state their volumes	• **Exclude** conversions.
					b	Compare the relative sizes of 1 cubic inch/foot and 1 cubic centimeter/meter	
4	**Measurement**	11	**DETERMINE THE AREA AND PERIMETER OF A SQUARE, A RECTANGLE AND OTHER FIGURES MADE UP OF SQUARES AND/OR RECTANGLES, USING THE FORMULAS.**	4			• Include rectangles with equal area and different perimeters and rectangles with equal perimeters and different areas.
					a	Find one dimension of a rectangle given the other dimension and its perimeter or its area.	
					b	Find the side of a square given its perimeter or its area.	• **Exclude** use of or non-square areas.
4	**Measurement**	12	**SOLVE WORD PROBLEMS INVOLVING: AREA AND PERIMETER OF SQUARES AND RECTANGLES.**	3			• **Exclude** conversions.
4	**Tables and Graphs**	13	**READ, INTERPRET AND COMPLETE (USING GIVEN INFORMATION) TABLES AND BAR GRAPHS**	5	a	Solve problems using data presented in bar graphs and tables.	• **Exclude** collecting data and presenting the data in a table form and a bar graph form.
4	**Fractions**	14	**UNDERSTAND FRACTIONS AS PARTS OF A SET OF OBJECTS.**	3			• Fractions as parts of a unit whole are introduced in second grade. Here we reiterate that a set can also represent the "whole." E.g., the whole might be a class of 24 students.
4	**Fractions**	15	**KNOW HOW TO USE EQUIVALENT FRACTIONS WITH DENOMINATORS UP TO 12 OR EQUAL TO 100.**	5	a	Use pictures to explain why equivalent fractions are equal, that is, the same point on the number line or the part of a whole.	

Grade	Strand		Standard	Days		Sub Points	Remarks
4	Fractions	16	LOCATE AND COMPARE FRACTIONS WITH DENOMINATORS OF 12 OR LESS ON THE NUMBER LINE.	4			• Note this involves improper fractions.
4	Fractions	17	KNOW THAT $\frac{n}{n}=1$ AND THAT $\frac{m}{n}$ WHERE $m>n$ IS CALLED AN IMPROPER FRACTION; PLACE THEM ON THE NUMBER LINE.	3			• **Exclude** conversions.
4	Fractions	18	INTRODUCE MIXED NUMBER AS AN ALTERNATE NOTATION FOR IMPROPER FRACTIONS.	4			• **Exclude** expressing an improper fraction/mixed number in its most reduced (simplest) form.
							• Relate to remainder in division.
4	Fractions	19	ADD AND SUBTRACT FRACTIONS LESS THAN 1 AND WITH DENOMINATORS UP TO 12 OR EQUAL TO 100.	7	a	Include fractions where both denominators are equal.	• Illustrate using fractional parts of rectangles.
					b	Fractions where one denominator is a multiple of the other.	• **Exclude** sums involving more than 2 different denominators.
							• Exclude sums where one denominator is not a multiple of the other.
							• Use the number line extensively.
					c	Write mathematical statements for given situations involving addition and subtraction.	• Take verbal statements of a problem and have students write mathematically.
					d	Solve for the unknowns in equations such as: $\frac{1}{8}+x=\frac{5}{8}$ or $\frac{3}{4}-y=\frac{1}{2}$.	• Continue to use letters to represent unknowns.

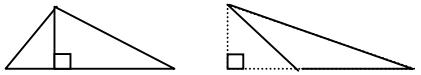
Grade	Strand		Standard	Days		Sub Points	Remarks
4	Fractions	20	MULTIPLY A FRACTION AND A WHOLE NUMBER.	6	a	Use repeated addition and area models to define the multiplication of fractions.	• The area model for fractions is done in terms of the area of a rectangle e.g. $\frac{2}{3}\times 3 = 2$ A rectangle with area 2/3 by 3 is illustrated by 
4	Fractions	21	SOLVE WORD PROBLEMS INVOLVING FRACTIONS.	4			• **Exclude** question such as 'Express the number of girls as a fraction of the number of boys.' as it will be dealt with under the topic 'Ratio'.
4	Decimals (Decimal Fractions)	22	UNDERSTAND AND USE NUMBER NOTATION AND PLACE VALUE INVOLVING TERMINATING DECIMALS.	12	a	Know that a terminating decimal is short hand notation for a special class of fractions with powers of 10 in the denominators.	• Reconcile this conception of decimal with its former occurrence in the context of money.
							• This involves rewriting fractions: $\frac{1}{2} = \frac{50}{100} = 0.5$
					b	Locate 1/10 and 1/100 on a number line.	
					c	Read and interpret decimals up to 2 decimal places.	• Include identifying the values of the digits in a decimal.
							• Include sums such as the following: (i) $0.12 = \frac{1}{10} + \frac{2}{100}$ (ii) $21.20 = 21 + \frac{20}{100}$ (iii) $0.12 = \frac{12}{100}$

Grade	Strand		Standard	Days		Sub Points	Remarks
4	Decimals (Decimal Fractions)	23	ADD AND SUBTRACT DECIMALS UP TO 2 DECIMAL PLACES	5			• **Exclude** whole numbers.
							• Help student to realize that arithmetic of decimals is like arithmetic of whole numbers once they have the same denominator.
4	Decimals (Decimal Fractions)	24	MULTIPLY AND DIVIDE DECIMALS UP TO 2 DECIMAL PLACES BY A 1-DIGIT WHOLE NUMBER WHERE THE DIVISION RESULTS IN TERMINATING DECIMALS.	6			• Include division of whole number by whole number with decimal answers.
							• Division such as 5 ÷ 3 leads to infinite (repeating) decimals which many children will understand. Discuss this informally.
							• Include rounding off answers to 2 decimal places.
							• Include checking reasonableness of answers.
4	Decimals (Decimal Fractions)	25	WRITE TENTHS AND HUNDREDTHS IN DECIMAL AND FRACTION NOTATIONS AND KNOW THE FRACTION AND DECIMAL EQUIVALENTS FOR HALVES AND FOURTHS.	3			• For example, $\frac{1}{2}=\frac{(50\times1)}{(50\times2)}=\frac{50}{100}=\frac{5}{10}=.5$ $\frac{7}{4}=\frac{(25\times7)}{(25\times4)}=\frac{175}{100}=1.75$ $\frac{2}{5}=\frac{(20\times2)}{(20\times5)}=\frac{40}{100}=\frac{4}{10}=.4$
4	Decimals (Decimal Fractions)	26	SOLVE WORD PROBLEMS INVOLVING DECIMALS.	3			• Include rounding off answers to a specified degree of accuracy.
							• Include checking reasonableness of answers.
							• Include examples involving money.

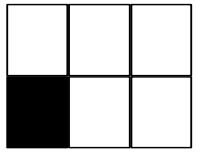
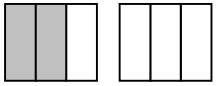
Grade	Strand		Standard	Days		Sub Points	Remarks
4	Geometry	27	UNDERSTAND AND USE ANGLES.	5	a	Associate an angle as a certain amount of turning.	
					b	Identify right angles and measure them using square corners.	• Identifying right angles in a figure, restrict to only right angles inside the figure? Example: 
							Exclude figures such as: 
					b	Tell whether a given angle is larger or smaller than a right angle.	• **Exclude** use of terms 'acute', 'obtuse' and 'reflex' angles.
4	Geometry	28	DRAW PERPENDICULAR AND PARALLEL LINES USING RULER AND SQUARES.	3	a	Identify perpendicular, parallel, and intersecting lines.	• Include use of the terms 'vertical' and 'horizontal'.
							• Notice angles relating to intersecting and perpendicular lines.
4	Geometry	29	IDENTIFY AND KNOW BASIC PROPERTIES OF GEOMETRICAL FIGURES.	4	a	Identify and know the following quadrilaterals: rectangle; square; parallelogram.	
					b	Know and use properties and relationships of sides, angles, and diagonals of quadrilaterals.	
					c	Identify and name the following triangles: isosceles; equilateral; right-angled; learn working definitions.	• **Exclude** use of the terms 'scalene', 'acute' and 'obtuse'.
					d	Identify and use an informal definition of a circle.	

Grade	Strand		Standard	Days		Sub Points	Remarks
4	Geometry	30	VISUALIZE AND DESCRIBE MODELS OF GEOMETRIC SOLIDS (FOR EXAMPLE PRISMS AND PYRAMIDS) IN TERMS OF THE NUMBER AND SHAPE OF FACES, EDGES, AND VERTICES.	14			

Grade	Strand		Standard	Days		Sub Points	Remarks
5	Whole Numbers	1	UNDERSTAND MEANING OF DIVISION OF WHOLE NUMBERS WITH AND WITHOUT REMAINDERS.	7	a	Understand that among whole numbers, the division, a÷b, makes sense only when a is a multiple of b, and then, a÷b=c, means exactly that a=c×b.	• If a ÷ b = c, then (a ÷ b) x b = c x b = a. Also (a x b) ÷ b = a by the definition of division. In this sense, we say "division and multiplication invert each other." So if 6÷3=2, then (6÷3)×3=2×3=6.
							• This is only one possible extension of the notion of division. Fractions provide a second extension.
							• Help students understand that division among whole numbers can be interpreted as repeated subtraction, e.g. 18÷6=3 means 18=3×6=6+6+6 so that subtracting 6 from 18 three times leaves nothing behind.
					b	Know that if a is not a multiple of b, then the division a÷b has to be expressed by division-with-remainder: a=bQ+R, where Q is a whole number, and the "remainder", R, is a whole number less than 6	• The long division algorithm's a repeated application of division-with-remainder.
							• The distributative law relating multiplication and addition is a critical component of understanding the standard division algorithms.
5	Whole Numbers	2	USE LONG DIVISION TO DIVIDE NUMBERS UP TO 4 DIGITS BY A 2 DIGIT NUMBER.	13	a	Divide numbers by tens, hundreds and thousands. Do this by mental arithmetic.	• Help children understand that estimation is heavily used as a part of the long division algorithm.
					b	Write mathematical statements involving division for given situations.	• Take verbal statements of a problem and have the student write it mathematically.
5	Whole Numbers	3	KNOW THAT EVERY WHOLE NUMBER IS A PRODUCT OF PRIMES .	5	a	Be able to determine the prime factorizations of numbers between 1 and 50.	• Introduce exponential notation as a precursor to the formal study of Algebra.
					b	Express prime factorizations using exponential notation, e.g., $24 = 2^3 \times 3^1$.	
5	Whole Numbers	4	SOLVE WORD PROBLEMS INVOLVING MULTIPLICATION AND DIVISION OF WHOLE NUMBERS.	4			

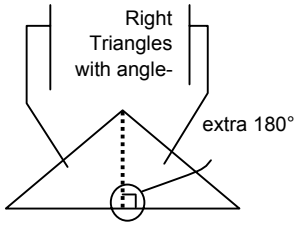
Grade	Strand		Standard	Days		Sub Points	Remarks
5	Measurement	5	**CONVERT MEASUREMENTS OF LENGTH, WEIGHT, VOLUME AND TIME FROM A SMALLER UNIT OF MEASURE TO A LARGER UNIT, AND VICE VERSA.**	7			• **Exclude** measurements involving decimals for time.
							• Numbers involved should be within easy manipulations.
5	Measurement	6	**UNDERSTAND AND KNOW HOW TO USE THE AREA FORMULA OF A PARALLELOGRAM: A = bh.**	3	a	Represent using models and manipulatives.	• Understand that the height is not necessarily the length of the second pair of sides.
							• Use models and manipulatives to develop formulas.
5	Measurement	7	**UNDERSTAND AND KNOW HOW TO USE THE AREA FORMULA OF A TRIANGLE:** $A = \frac{1}{2}bh$	3	a	Represent using models and manipulatives.	• Include identifying the base and its corresponding height.
							• Do cases where the altitude is both within and outside the triangle. 
							• **Exclude** finding the base or height of a triangle given its area.
5	Measurement	8	**USE FORMULAS TO COMPUTE THE VOLUME AND SURFACE AREA OF A CUBE AND RECTANGULAR PRISM.**	4			• Use models and manipulatives to develop formulas.
5	Measurement	9	**SOLVE WORD PROBLEMS USING MULTIPLICATION AND DIVISION INVOLVING THE VOLUMES OF SOLIDS.**	4			• Draw patterns (of faces) for a cube and rectangular prism that , when cut, will make a model of these solids (nets).
5	Graphs	10	**READ, INTERPRET AND SOLVE PROBLEMS USING INFORMATION PRESENTED IN LINE GRAPHS.**	4			• Include simple examples of distance-time graphs.

Grade	Strand		Standard	Days		Sub Points	Remarks
5	Fractions	11	GIVEN TWO FRACTIONS, EXPRESS THEM AS EQUIVALENT FRACTIONS WITH A COMMON DENOMINATOR BUT NOT NECESSARILY A LEAST COMMON DENOMINATOR (EMPHASIS ON DENOMINATORS EQUAL TO OR LESS THAN 12 OR EQUAL TO 100).	5			• The easiest common denominator of a/b, c/d is bd.
							• Include reducing fractions to lowest terms.
5	Fractions	12	ADD AND SUBTRACT FRACTIONS WITH UNLIKE DENOMINATORS; DENOMINATORS OF GIVEN FRACTIONS ARE EQUAL TO 1,2,..,11,12, OR 100.	5	a	Write mathematical statements for given situations involving addition and subtraction of fractions.	• Take verbal statements of a problem and have students write mathematically.
					b	Solve for the unknown in such equations as: $\frac{1}{4}+x=\frac{7}{12}$.	• Include listing of equivalent fractions to identify fractions with common denominator.
					c	Add fractions using the common denominator that is the product of the denominators of the two fractions, i.e., $\frac{a}{b}+\frac{c}{d}=\frac{ad+bc}{bd}$	• Denominators of given fractions should not exceed 12.
							• Do not focus on the formula per se - students should not be required to memorize the formula in its abstract form, but to understand its use
							• Help students understand why this algorithm works.

Grade	Strand		Standard	Days		Sub Points	Remarks
5	Fractions	13	**KNOW THE MEANING OF THE PRODUCT OF TWO UNIT FRACTIONS IN TERMS OF AN AREA MODEL AS WELL AS THE PRODUCT OF A FRACTION BY A WHOLE NUMBER.**	7			• Emphasize fractions with small denominators for the purpose of drawing pictures. For example, $\frac{1}{2}\times\frac{1}{3}=\frac{1}{6}$ 
							• Do not use pie models here.
							• Help students understand that multiplication of a number by a fraction can result in a smaller number.
5	Fractions	14	**UNDERSTAND A FRACTION AS A STATEMENT OF DIVISION.**	3	a	Be able to draw the pictoral representation of simple fractions such as 3/4, 4/5 and 5/6.	• Show that 1 ÷ 3 = 1/3 by examining:  where the area of the square is defined as the whole for interpreting the fraction. The picture represents 1part of 3, 1/3 and 1÷3.
							• Show that 2÷3 = 2/3 by examining,  where the area of one square is defined as the whole for interpreting the fraction 2/3. Interpret 2÷3 as the size of a part that results when 2 units are divided into 3 equal parts.
							• For example, 2/3 is the division of 2 by 3 and can be described by the property that 3 times 2/3 is 2.

Grade	Strand		Standard	Days		Sub Points	Remarks
							• For example, you have 3 cookies to divide among 4 people. Each person gets 3/4 of a cookie. Therefore, 3÷4 = 3/4.
							• For example, recognize that 2/3 implies 2 out of 3 parts, but also 2÷3 in the general sense of partitive division.
							• Include conversion between fractions and decimals.
5	Fractions	15	**DIVIDE A FRACTION BY A WHOLE NUMBER AND A WHOLE NUMBER BY A FRACTION. (LIMIT TO SIMPLE UNIT FRACTIONS).**	7	a	As in the case of division among whole numbers, division among fractions is just a rewrite of multiplication.	• For example, $\frac{1}{2} \div 4 = \frac{1}{8}$ is exactly the same as $\frac{1}{2} = 4 \times \frac{1}{8}$
							• Present as inverse operations.
							• Generalize that a = c/b implies ab = c.
5	Fractions	16	**SOLVE WORD PROBLEMS INVOLVING FRACTIONS.**	4			
5	Decimals (Decimal Fractions)	17	**MULTIPLY AND DIVIDE A DECIMAL BY A WHOLE NUMBER.**	16	a	Multiply and divide decimals up to two decimal places by integer multiples of 10, 100, 1,000.	• **Exclude** cases where the first non-zero digit in the answer is at the 4th decimal place such as 0.12 / 1,000 = 0.00012.
					b	Understand and use the fact that when multiplying a whole number by 0.1and 0.01 a pattern emerges in terms of shifting the decimal point to the left.	
					c	Multiply 1- and 2-digit whole numbers by decimals up to two decimal places.	• Include checking reasonableness by estimation.
							• Multiplying by a decimal might result in a smaller number.
							• Decimals can be greater than one.
					d	Use mental arithmetic with multiplication and division of whole numbers and decimals.	

Grade	Strand		Standard	Days		Sub Points	Remarks
					e	Solve word problems involving decimals.	• Include rounding off answers to a specified degree of accuracy.
5	**Geometry**	**18**	**KNOW THE MEANING OF AND USE ANGLES.**	**11**	**a**	Know that angles are measured by degrees. Know the definitions of a right angle, an acute angle, and an obtuse angle. Understand that 90º, 180º, 270º, and 360º are associated, respectively with 1/4, 1/2, and 3/4, and full turns .	• **Exclude** angles between parallel lines and transversals such as alternate angles, interior angles, corresponding angles.
					b	Identify and name: angles on a straight line and vertical angles.	• **Exclude** use of the terms 'complementary' and 'supplementary.'
					c	Surround a point with angles and recognize that angles on a straight line add up to 180^{o} and angles around a point add up to 360^{o}.	
					d	Recognize that vertical angles are equal.	
					e	Find unknown angles involving: angles on a straight line, angles at a point, and vertical angles.	
5	**Geometry**	**19**	**KNOW THAT THE SUM OF THE ANGLES OF ANY TRIANGLE IS 180^{o} AND THE SUM OF THE ANGLES OF ANY QUADRILATERAL IS 360^{o} AND USE THIS INFORMATION TO SOLVE PROBLEMS.**	**4**	**a**	Do the case of quadrilaterals by decomposing a quadrilateral into two triangles.	• Use manipulatives, but no need to prove statement about sum of angles.

Grade	Strand		Standard	Days		Sub Points	Remarks
							• Note (for teacher background only) to prove that the sum of the interior angles of a triangle is a straight angle is to first prove it for right triangles using the fact that the sum of the angles of rectangle is 360° (4 x 90°) and cut the rectangle by a diagonal to get to congruent right triangles. Then to get the general result drop a perpendicular from the opposite vertex to the longest side of the general triangle.  180° + 180° - 180° = Then one can compute angle sums for parallelograms, and then general quadrilaterals.
5	Geometry	20	**KNOW AND USE PROPERTIES OF PARALLELOGRAMS, AND TRIANGLES, INCLUDING SOME WITH ADDITIONAL CHARACTERISTICS SUCH AS RIGHT, EQUILATERAL AND ISOSCELES TRIANGLES AND SQUARES, RECTANGLES AND RHOMBUSES.**	11	a	State and find unknown angles using the properties of: a parallelogram (opposite sides are parallel and equal in length), and a trapezoid (at least one pair of sides are parallel).	
					b	Define a trapezoid as having at least one pair of parallel edges.	• We are aware that the standard definition of a trapezoid involves exactly one pair of parallel sides but the definition we propose has mathematical advantages.

Grade	Strand		Standard	Days		Sub Points	Remarks
					c	Know that the parallelogram is a special case of a trapezoid.	
5	Data	21	CALCULATE THE MEAN OF A SET OF DATA AND FIND THE TOTAL AMOUNT GIVEN THE MEAN AND THE NUMBER OF ITEMS.	4			
5	Data	22	SOLVE UP TO 3-STEP WORD PROBLEMS INVOLVING MEANS.	3			
5	Ratio	23	INTERPRET AND USE RATIOS.	11	a	Recognize equivalent ratios.	• A ratio is the comparison of two quantities in terms of division.
							• Use example from real situations, e.g., recipes, etc.
							• Introduce the sign ':' as in 3:5.
					b	Solve up to 2-step word problems involving ratio.	• Include problems such as the following: (i) 1 : 2 = [ ] : 8 (ii) 2 : [ ] = 1 : 4
							• Include scaling up and down the ratio a : b : c
							• Use examples such as the ratio of the number of tricycles to the number of wheels.
5	Percentages	24	UNDERSTAND AND USE THE CONCEPT OF PERCENTAGE.	12	a	Change fractions and decimals to percentages, and vice versa.	• Note that percent means 'part of 100.'
							• Include use of the percentage notation '%.'
					b	Express a part of a whole as a percentage.	• Include recognizing the equivalence between percentage and fraction/decimal.
							• Memorize basic equivalences of fractions, percentages and decimals.
					c	Calculate part of a whole given the percentage and the whole.	
					d	Solve word problems involving percentage.	• **Exclude** use of terms 'profit' and 'loss.'

Grade	Strand		Standard	Days		Sub Points	Remarks
6	**Fractions**	1	**DIVIDE ANY TWO FRACTIONS INCLUDING MIXED NUMBERS.**	10	**a**	Understand the division algorithm for fractions.	• Emphasize that, as in the case of whole numbers, division of fractions is just a rewrite of the corresponding statement about multiplication of fractions. Thus, if A,B,C are fractions, then *A ÷ B = C* is another way of writing *A = C x B*. Thus, $\frac{a}{b} \div \frac{c}{d} = \frac{ad}{bc} \Rightarrow \frac{ad}{bc} \times \frac{c}{d} = \frac{a}{b}$ And we see that ad/bc is the quantity which, when multiplied by c/d gives a/b.
							• There will be a tendency to simply memorize the formula "invert and multiply." It is very important that this formula be explained and justified, not just memorized.
					b	Write mathematical statements for given situations involving dividing fractions.	• Take verbal statements of a problem and have students write mathematically.
					c	Find the unknowns in statements such as *1/4 ÷ [ ] = 1* and *1/4 ÷ [ ] = 3/4* and *1/2 = 1 x [ ].*	
6	**Rational Numbers**	2	**PERFORM ACCURATELY MANUAL MULTISTEP CALCULATIONS THAT MULTIPLY, DIVIDE, SUBTRACT AND ADD <u>POSITIVE</u> RATIONAL NUMBERS.**	10	**a**	Understand the procedures used in the computations.	• Includes division of mixed numbers by first converting to fractions.
					b	Use estimation and mental calculations to check reasonableness of results.	
					c	Solve word problems.	
6	**Rational Numbers**	3	**KNOW THE DEFINITION OF NEGATIVE NUMBERS INCLUDING PLACING THEM ON THE NUMBER LINE.**	3	**a**	Know that x + (-x) = 0 and that x and -x are on opposite sides of 0 at equal distance on a number line.	
					b	Understand that absolute value is defined as the value of the integer ignoring the sign, e.g., the absolute value of (-3) is 3. It can be thought of as the distance from 0 on the number line but *not* the location or the directed distance.	

Grade	Strand		Standard	Days		Sub Points	Remarks
					c	Understand that the number zero is an integer that is neither negative nor positive.	
6	Rational Numbers	4	ORDER RATIONAL NUMBERS AND PLACE THEM ON THE NUMBER LINE.	3			
6	Rational Numbers	5	ADD AND SUBTRACT, MULTIPLY AND DIVIDE INTEGERS.	5	a	Emphasize small integers, e.g., those between -10 and 10.	• Use the number line for addition and subtraction.
							• Use chip models with chips of different colors representing either +1 or -1.
					b	Know that the division of integers is the inverse of the multiplication of integers.	• Multiplication of integers is defined by the requirement that it must satisfy the distributive and associative properties. E.g., (-1) x (-1) must equal 1 since (-1) is the additive inverse of 1 and vice versa. 1+(-1)=0 [multiply both sides by (-1)] 1(-1)+(-1)(-1)=0(-1) (-1)+(-1)(-1)=0 This implies that (-1)(-1) is the additive inverse of (-1). Therefore, (-1)(-1)=1.
							• Note:(-3)×(-5)=3×5 If we can show that [(-3)×(-5)]+[-(3×5)]=0, then [(-3)×(-5)] has to equal 3×5. But, 3×(-5)=(-5)+ (-5)+ (-5)=(-15)=-(3×5), so it is enough to show that [(-3)×(-5)]+[3×(-5)]=0. Now we can use the distributive law: [(-3)×(-5)]+[3×(-5)]=[(-3)×3]×(-5)=0×(-5)=0. Note that the fact of (-a)×(-b)=ab can be shown in exactly the same way. The distributive law is the underlying reason for this fact.

Grade	Strand		Standard	Days		Sub Points	Remarks
6	**Rational Numbers**	6	**UNDERSTAND THAT RATIONAL NUMBERS ARE QUOTIENTS OF INTEGERS (POSITIVE OR NEGATIVE) WITH A NON ZERO DENOMINATOR.**	2	**a**	Understand that a rational number is either a fraction or a negative fraction	• Note: rational numbers are the union of fractions and negative fractions, the latter being points on the number line which are symmetrical to the fractions with respect to 0.
					b	Represent rational numbers as fractions or terminating decimals when possible and translate between these representations.	
					c	Recognize that a finite decimal is a fraction with denominator as a power of 10. Represent appropriate fractions as terminating decimals, e.g. 4/5 = .8.	
					d	Understand that a fraction or a negative fraction is a quotient of two integers, for example, -8/3 is -8 divided by 3.	• A negative fraction is always equal to such a division.
6	**Percentages**	7	**CALCULATE PERCENTAGES AND USE THEM TO SOLVE COMMON PROBLEMS ABOUT SALES TAX, TIPS, INTEREST AND DISCOUNTS.**	5			• **Exclude** compound interest problems
6	**Real Numbers**	8	**UNDERSTAND AND USE INTEGER EXPONENTS.**	4	**a**	Use integer exponents to express number in scientific notation.	• **Exclude** powers of negative numbers. $(-1)^2 = 1$
6	**Ratio**	9	**CALCULATE RATES OF CHANGE, INCLUDING SPEED.**	5			
6	**Measurement**	10	**CONVERT BETWEEN BASIC UNITS OF MEASUREMENT WITHIN A SINGLE MEASUREMENT SYSTEM (e.g. SQUARE INCHES TO SQUARE FEET).**	5	**a**	Judge reasonableness of answers by mental estimation.	
6	**Probability**	11	**UNDERSTAND DIFFERENT WAYS OF EXPRESSING PROBABILITIES (e.g. AS DECIMALS, PERCENTAGES).**	5	**a**	Understand the probability of an event is a number between zero and one. A zero denotes certainty that it will not occur, and a one denotes certainty that it will occur.	

Grade	Strand		Standard	Days		Sub Points	Remarks
6	Probability	12	COMPUTE PROBABILITIES OF EVENTS FROM SIMPLE EXPERIMENTS WITH EQUALLY PROBABLE OUTCOMES (e.g. TOSSING DICE, FLIPPING COINS, SPINNING SPINNERS).	6			
6	Geometry	13	FOR TWO-DIMENSIONAL FIGURES, UNDERSTAND BASIC FACTS ABOUT ANGLES, LINES AND TRIANGLES.	8	a	the triangle inequality with informal justification.	• Emphasize that the sum of the lengths of any two sides is greater than the length of the remaining side.
					b	the relationships of vertical (opposite), adjacent, complementary, and supplementary angles.	
					c	that if a line intersects two parallel lines, then the corresponding angles and the alternate interior angles are equal.	
					d	that, conversely, if a line intersects two other lines and the corresponding or alternate interior angles are equal, then the two lines are parallel.	
					e	understand the meaning of interior and exterior angles in triangles and recognize that each exterior angle of a triangle is equal to the sum of the interior opposite angles.	
					f	understand that the sum of exterior angles of a convex polygon is 360°	
6	Geometry	14	KNOW THE MEANING OF THE CONGRUENCE OF POLYGONS AS THE EQUALITY OF CORRESPONDING SIDES AND ANGLES.	5			• Intuitively, congruence means "same size and same shape."
6	Geometry	15	KNOW THE DEFINITIONS OF THE STANDARD *RIGID MOTIONS IN THE PLANE* (ROTATIONS, REFLECTIONS, AND TRANSLATIONS), AND RELATE THESE TO THE CONCEPT OF CONGRUENCE.	5			• It is important to make the abstract idea of congruence concrete; one can check the congruence of triangles by using at most three of these rigid motions, first a translation, then a rotation, and finally, if necessary, a reflection.

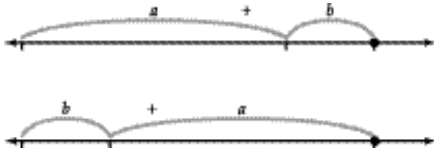
Grade	Strand		Standard	Days		Sub Points	Remarks
							• Rigid motion should be approached informally at this level. A rotation moves an arbitrary point P of the plane to another point P' in the following way: First of all, a rotation cannot make sense unless we also know its center O and its angle of rotation k, k being a number bigger than or equal to 0. Then imagine the plane as a piece of hard plastic pinned down at O, and we rotate this piece of plastic counter-clockwise around O by k degrees. The new position of P is then the sought after P'.
							• A reflection with respect to a line L moves a point P to its mirror image P' with respect to L, i.e., the line segment PP' has the line L as its perpendicular bisector.
							• A translation in the direction AB (where AB is a given segment) moves the points of the plane by sliding the whole plane along the line AB from A to B. Again it would be convenient to imagine the plane as a piece of hard plastic in the sliding. More precisely, it moves a point P not on the line AB to another P' so that ABP'P is a parallelogram (its vertices being named cyclically). If P lies on the line AB, then we require P' to the point on the line AB so that the direction going from A to B is the same as the direction as going from P to P', and the line segment AB has the same length as the line segment PP'.
6	**Algebra**	**16**	**USE THE COMMUTATIVE PROPERTIES OF MULTIPLICATION AND ADDITION TO SOLVE PROBLEMS.**	**3**			
6	**Algebra**	**17**	**USE ORDERED PAIRS TO IDENTIFY COORDINATE POINTS IN ALL FOUR QUADRANTS.**	**3**			• This is the introduction to the coordinate plane.

Grade	Strand		Standard	Days		Sub Points	Remarks
6	Algebra	18	USE LETTERS TO REPRESENT THE VALUE OF QUANTITIES IN A VARIETY OF CONTEXTS.	2	a	Analyze verbal problems and generate algebraic expressions.	• This is review since they have used boxes and other place holders as variables in grades 1 through 5.
6	Algebra	19	USE THE CONVENTIONS FOR WRITING ALGEBRAIC EXPRESSIONS (e.g. OMITTING THE SYMBOL FOR MULTIPLICATION AND WRITING NUMBER COEFFICIENTS BEFORE LETTERS).	4			• The standard deals with what is traditionally called order of operations.
6	Algebra	20	UNDERSTAND THAT RELATIONSHIPS BETWEEN QUANTITIES CAN BE REPRESENTED USING FORMULAS AND VERBAL DESCRIPTIONS AND CAN BE SUGGESTED BY GRAPHS AND TABLES.	8			• Emphasize that tables or graphs only represent part of a relationship and do not allow it to be fully determined.
6	Algebra	21	GENERATE AND SOLVE LINEAR EQUATIONS OF THE FORM $ax + b = c$.	8			
6	Algebra	22	REPRESENT ASPECTS OF SIMPLE LINEAR AND NON LINEAR FUNCTIONS USING VERBAL DESCRIPTIONS, TABLES, AND GRAPHS.	15	a	Generate data and graph the relationships in cases such as: common metric and English units of measurement for length, area, volume, weight and time; the area and radius of a circle; the circumference and radius of a circle; and the side, surface area, and volume.	

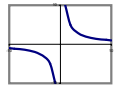
Grade	Strand		Standard	Days		Sub Points	Remarks
6	Algebra	23	SOLVE PROBLEMS INVOLVING LINEAR FUNCTIONS WHOSE DOMAIN IS PART OF THE INTEGERS AND WHOSE VALUES ARE INTEGERS; WRITE THE EQUATION; AND GRAPH THE RESULTING ORDERED PAIRS OF INTEGERS ON A GRID.	10			• Given n chairs, the "leg function" F(n) = 4n has a domain comprised of integers and has values that are also integers.
6	Algebra	24	UNDERSTAND WHY IDENTICAL MANIPULATIONS CARRIED OUT ON BOTH SIDES OF AN EQUATION CREATE NEW EQUATIONS THAT HAVE THE SAME SOLUTIONS AS THE ORIGINAL (AS WELL AS POSSIBLY SOME ADDITIONAL SOLUTIONS).	6	a	Keep equations "balanced" by carrying out the same operations on each side.	• **Exclude** manipulations with exponents or roots.
					b	Know and understand that equals added to equals are equal.	• Be careful about possibility of dividing by 0.
					c	Know and understand that equals multiplied by equals are equal.	• Restrict only to the operations +, -, × and ÷.
6	Algebra	25	TRANSLATE VERBAL EXPRESSIONS AND SENTENCES INTO ALGEBRAIC EXPRESSIONS AND EQUATIONS; EVALUATE ALGEBRAIC EXPRESSIONS, SOLVE SIMPLE LINEAR EQUATIONS, AND GRAPH AND INTERPRET THEIR RESULTS.	23	a	Write and solve one-step linear equations in one variable, of the form ax+b=c.	• Use only integer coefficients.
					b	Write and evaluate an algebraic expression for a given situation, using up to three variables.	
					c	Solve equations manually by using the correct order of operations or by using a scientific calculator.	

Grade	Strand		Standard	Days		Sub Points	Remarks
7	Ratio	1	CALCULATE SLOPE OF A RAMP, STAIRS, OR A LINE AND EXPRESS THE ANSWER AS A FRACTION, A DECIMAL, OR AS A PERCENT.	9			• The concept of slope requires understanding of Standard 8 on similar triangles.
7	Ratio	2	SOLVE SIMPLE PROPORTION PROBLEMS.	5			
7	Rational Numbers	3	PERFORM ACCURATELY MANUAL MULTISTEP CALCULATIONS THAT ADD, SUBTRACT, MULTIPLY, AND DIVIDE NEGATIVE RATIONAL NUMBERS.	11	a	Understand the procedures used in the computations.	
					b	Estimate results by mental calculation before performing computations.	
7	Real Numbers	4	UNDERSTAND CONCEPTS OF SQUARE ROOT, CUBE ROOT AND NTH ROOT AND BE ABLE TO ESTIMATE SQUARE ROOTS AND CUBE ROOTS.	4	a	Use calculators here both to estimate square and cube roots and to find the square roots.	• For example, the square root of 8 is 2.8 to the first decimal place because $2.8^2 = 7.84$ and $2.9^2 = 8.41$.
7	Data Analysis	5	UNDERSTAND RELATIVE AND CUMULATIVE FREQUENCIES AND ASSOCIATED RATIOS OR DECIMALS.	4			
7	Data Analysis	6	STUDENTS SHOULD BE ABLE TO COLLECT, ORGANIZE AND ANALYZE BOTH SINGLE VARIABLE AND TWO VARIABLE DATA.	14	a	Represent and interpret data using a variety of graphs and charts, including box plots.	• Use calculators unless computational burden is minimal.
					b	Calculate relative and cumulative frequencies.	
					c	Find and interpret the median, upper quartile, lower quartile and inner-quartile range of a set of data and determine what they mean.	
					d	Create and interpret scatter plots.	

Grade	Strand		Standard	Days		Sub Points	Remarks
7	Geometry	7	UNDERSTAND THE MEANING OF THE SIMILARITY OF POLYGONS AS THE EQUALITY OF CORRESPONDING ANGLES AND THE EQUALITY OF THE RATIOS OF CORRESPONDING SIDES. THIS RATIO IS CALLED THE SCALE FACTOR OF THE SIMILARITY.	11	a	Understand that (intuitively) two-dimensional figures having the same shape but not necessarily the same size are similar.	
					b	Find the lengths of sides in a figure, given the scale factor and dimensions of a similar figure.	
					c	Create, interpret and use scale drawings to help solve problems.	
7	Geometry	8	UNDERSTAND AND USE THE CRITERIA SAS AND AAA FOR THE SIMILARITY OF TRIANGLES.	5			• Rely only on heuristic arguments and hands-on experiments.
							• No proofs
7	Geometry	9	UNDERSTAND WHY IF TWO TRIANGLES ARE SIMILAR, WITH SCALE FACTOR r, THEN THEIR AREAS ARE RELATED BY A FACTOR OF r^2.	3			• Use the area formula for triangles.
7	Geometry	10	BE ABLE TO MAKE ELEMENTARY CONSTRUCTIONS SUCH AS THE PERPENDICULAR BISECTOR TO A LINE SEGMENT, AN EQUILATERAL TRIANGLE, THE BISECTOR OF AN ANGLE AND A REGULAR HEXAGON USING A STRAIGHT EDGE AND A COMPASS.	13			• Exclude the proof of perpendicular bisector.
7	Geometry	11	DRAW SQUARES, RECTANGLES, PARALLELOGRAMS AND TRIANGLES FROM GIVEN DIMENSIONS.	5			• Use a ruler, protractor, and compass.
7	Algebra	12	KNOW AND UNDERSTAND THE BASIC PROPERTIES OF REAL NUMBERS:	9	a	Apply the additive property of zero	• Axioms can be stated formally and will likely need examples and a great deal of explanation; build on experience students have had with whole numbers when possible.
					b	Know that and and -a are additive inverses	• These are not intended to be memorized.

Grade	Strand		Standard	Days		Sub Points	Remarks
					c	Know that addition is commutative	• These facts are to be put to use to facilitate algebraic manipulations and computations.
					d	Know the distributive property of = over ×.	• Sub points a to h are based on the following axioms: For every real number a, a + 0 = a. For every real number a there is a real number -a so that a + -a = 0. "For all real numbers a and b, a + b = b + a.  For all real numbers a, b and c (a + b) + c = a + (b + c). For every real number a, a • 1 = a. For every real number a where a is not equal to 0 there is a number 1/a such that a • 1/a = 1. "For all real numbers a and b, a • b = b • a For all real numbers a, b and c, (a • b) • c = a •(b • c).
					e	Know the multiplicative property of 1	
					f	Know that a and 1/a are multiplicative inverses, a≠0.	
					g	Know that multiplication is commutative.	
					h	Know that multiplication is associative.	
7	**Algebra**	**13**	**USE PROPERTIES OF THE REAL NUMBER SYSTEM (e.g., DISTRIBUTIVE AND ASSOCIATIVE LAWS, ADDITIVE AND MULTIPLICATIVE IDENTITIES) TO SIMPLIFY EXPRESSIONS AND SOLVE EQUATIONS.**	**11**	**a**	Add, subtract, and multiply simple polynomial expressions.	

Grade	Strand		Standard	Days		Sub Points	Remarks
					b	Apply algebraic order of operations and the commutative, associative, and distributive properties to evaluate expressions; and justify each step in the process.	
7	**Algebra**	**14**	**CALCULATE THE VERTICAL AND HORIZONTAL DISTANCES FOR POINTS ON A GRAPHICAL REPRESENTATION OF A LINEAR FUNCTION AND RELATE SLOPE TO THE RATIO OF THESE DISTANCES.**	**2**	**a**	Understand that the definition of the concept of slope depends on a knowledge of similar triangles.	
7	**Algebra**	**15**	**UNDERSTAND PROPORTIONALITY AS IT RELATES TO A LINEAR FUNCTION.**	**18**	**a**	Understand that linear functions are characterized by constant rates of change.	
					b	Understand that in a graph of $y = mx + b$, the slope m is the rate of change and the parameter b is the value of y when $x = 0$.	
					c	Understand that a directly proportional relationship $y = mx$ is a special type of linear function in which the parameter $b = 0$ and m is the constant of proportionality.	
					d	Understand that $y = mx + b$ ($b \neq 0$), represents a linear relationship but not a directly proportional relationship.	
					e	Understand that $y = mx + b$ ($b \neq 0$), the increase in x is directly proportional to the increase in y.	
					f	Understand that a graph of $y = mx$ is a line with slope k that passes through the point (0, 0).	
					g	Understand that in a directly proportional relationship between two quantities one quantity is by definition a constant multiple of the other quantity.	
					h	Understand that an example of a relationship that is not directly proportional is the inversely proportional relationship $y = m/x$ where k is some non-zero number.	

Grade	Strand		Standard	Days		Sub Points	Remarks
					i	Understand that a graph of $y = m/x$ is not a line, that it crosses neither the x nor the y axis.	• The graph of y=m/x has the following basic shape, 
7	**Algebra**	16	**RECOGNIZE, REPRESENT AND WORK WITH LINEAR FUNCTIONS.**	19	a	Recognize whether information given in a table, graph or formula suggests a proportional, linear or nonlinear relationship.	
					b	Represent directly proportional and linear phenomena using verbal descriptions, tables, graphs and formulas, and translate among these representations.	
					c	Recognize directly proportional and linear phenomena, formulate and graph corresponding functions, and interpret the graph's slope and intercepts as properties of the original situation.	• Rely heavily on graphical representations.
					d	Work fluently with common directly proportional relationships and common linear functions.	• Possible examples include: i. the height and volume of a container with uniform cross-section; ii. the sum of a polygon's interior angles compared to the number of sides; iii. distance and time under constant speed; iv. corresponding measurement units in different systems, such as pounds and kilograms; v. total cost of a purchase, cost per unit, and the number of units purchased; vi. degrees Celsius and degrees Fahrenheit; vii. the height of water in a tank and the time taken to fill the tank (the initial value is nonzero); viii. the number of identical cups in a stack and the height of a stack.
					e	Recognize inversely proportional relationships for example: the length and width of a rectangle with fixed area.	

Grade	Strand		Standard	Days		Sub Points	Remarks
					f	Recognize relationships between quantities as examples of relationships that are not proportional, for example, the diameter and the area enclosed by a circle.	
					g	Evaluate $y = kx$ for specified values of x, given k.	
7	Algebra	17	**SOLVE EQUATIONS OF THE FORM: f(x)=g(x).**	4	a	Understand that to solve the equation f(x)=g(x) means to find all values of x for which the equation is true	
					b	Know that the solution to a linear equation corresponds to the point at which the graph of the associated linear function crosses the x-axis.	
7	Algebra	18	**GENERATE AND SOLVE LINEAR EQUATIONS OF THE FORM *ax + b = c* AND *ax + b = cx + d.***	6	a	Relate such equations to particular contexts.	
					b	Manipulate and solve such equations.	
					c	Interpret solution in terms of original context.	
7	Algebra	19	**RECOGNIZE AND EXPRESS CORRECTLY THE CONNECTIONS BETWEEN EQUATIONS AND FUNCTIONS.**	5			• Equations are related to, but different from functions, and it is important that students gain enough experience with both to recognize their similarities and differences.

Grade	Strand		Standard	Days		Sub Points	Remarks
8	Real Numbers	1	UNDERSTAND THAT, WHEN CONVERTED TO DECIMAL FORM, RATIONAL NUMBERS EITHER TERMINATE OR EVENTUALLY REPEAT; AND THAT ANY NUMBER WHOSE DECIMAL EXPANSION IS EITHER FINITE OR REPEATING REPRESENTS A RATIONAL NUMBER.	7			• Discuss infinite decimals intuitively.
					a	Be able to express a repeating decimal in fractional form and locate it on the number line to a specified degree of accuracy.	
					b	Understand that the finite decimals obtained by truncating an infinite decimal get closer and closer to the number the infinite decimal represents on the number line as the number of places increases.	• E.g., $\frac{1}{3} = 0.\overline{3}$ so 0.333 is closer to 1/3 than 0.33 or 0.3.
8	Real Numbers	2	UNDERSTAND THAT IRRATIONAL NUMBERS ARE THOSE WHICH BY DEFINITION CANNOT BE EXPRESSED AS QUOTIENTS OF INTEGERS.	3	a	Name some common examples of irrational numbers (e.g., $\sqrt{2}$, π) and locate them on the number line	
8	Ratio	3	SOLVE PROBLEMS THAT INVOLVE RATIO UNITS, SUCH AS POPULATION DENSITY (PERSONS PER SQUARE MILE), AIR PRESSURE (POUNDS PER SQUARE INCH), AND SPEED (MILES PER HOUR, UNIT RATE, DOLLARS PER POUND).	11	a	Understand indirect and derived quantities such as density, velocity and weighted averages.	
					b	Understand how the precision of measurement influences the accuracy of derived quantities calculated from measured quantities.	
					c	Calculate weighted averages such as course grades, consumer price indices and sports ratings.	
					d	Convert ratio quantities between different systems of units, as, for example, feet per second to miles per hour.	
					e	Judge reasonableness of answers by mental estimation.	
8	Probability	4	SOLVE SIMPLE PROBLEMS INVOLVING PROBABILITY AND RELATIVE FREQUENCY.	5	a	Understand the relation of probability to relative frequency.	

Grade	Strand		Standard	Days		Sub Points	Remarks
8	Probability	5	COMPARE THE PROBABILITY OF TWO OR MORE EVENTS AND RECOGNIZE WHEN CERTAIN EVENTS ARE EQUALLY LIKELY.	8	a	Understand common misconceptions about probabilities associated with dependent and independent events (e.g., lotteries).	
8	Geometry	6	PROVE THE PYTHAGOREAN THEOREM.	3	a	Use dissection arguments to prove.	• Do with the Tangram proof.
8	Geometry	7	USE THE PYTHAGOREAN THEOREM AND ITS CONVERSE TO SOLVE PERIMETER, AREA AND VOLUME PROBLEMS AND TO FIND DISTANCES BETWEEN POINTS IN THE CARTESIAN COORDINATE SYSTEM.	9			
8	Geometry	8	KNOW AND USE THE PERIMETER (CIRCUMFERENCE) AND AREA FORMULAS OF A CIRCLE.	3			
8	Geometry	9	SUBDIVIDE COMPLEX FIGURES INTO BASIC FORMS SUCH AS TRIANGLES, CIRCLES AND QUADRILATERALS SO AS TO COMPUTE THEIR AREA AND PERIMETER.	6	a		
8	Geometry	10	SOLVE PROBLEMS INVOLVING AREAS OF TRIANGLES, QUADRILATERALS AND CIRCLES.	6	a	Include finding the area of shapes built from the basic forms of triangles, parallelograms, and circles.	
8	Geometry	11	KNOW THE FORMULAS FOR VOLUMES FOR COMMON SOLIDS SUCH AS GENERALIZED CYLINDERS, GENERALIZED CONES AND HEMISPHERES AND OBSERVE THE RELATIONSHIP BETWEEN THE	3	a	A cylinder of height h whose base has area $A, V = Ah$.	
					b	A cone of height h whose base has area A, $V = 1/3\ ah$.	
					c	Explore the relation of length, area and volume measures (m, m^2, m^3).	

Grade	Strand		Standard	Days		Sub Points	Remarks
			VOLUME FORMULAS OF THE FIRST TWO.		**d**	Metric length, area and volume units from mm to km and conversions among them.	
8	**Geometry**	**12**	**UNDERSTAND THE CONCEPT OF SURFACE AREA AND FIND THE SURFACE AREA OF PRISMS, PYRAMIDS, AND CYLINDERS.**	**5**			• Use nets to clarify and help with these calculations.
8	**Geometry**	**13**	**SKETCH A VARIETY OF TWO-DIMENSIONAL REPRESENTATIONS OF THREE-DIMENSIONAL SOLIDS; FOR EXAMPLE, ORTHOGONAL VIEWS (TOP, FRONT AND SIDE), PICTURE VIEWS (PROJECTIVE OR ISOMETRIC) AND NETS (PLANE FIGURES THAT CAN BE FOLDED TO FORM THE SURFACE OF THE SOLID).**	**6**			
8	**Geometry**	**14**	**USE TWO-DIMENSIONAL REPRESENTATIONS TO SOLVE PROBLEMS.**	**3**			
8	**Geometry**	**15**	**KNOW THE DEFINITION OF A DILATION, AND RELATE IT TO THE CONCEPT OF THE SIMILARITY OF TRIANGLES.**	**3**			• No proofs, but the idea is to make clear that two figures are similar if one can be moved by a sequence or rigid motions so that it corresponds to the other by projection from a point.
8	**Geometry**	**16**	**UNDERSTAND THE CONCEPT OF SYMMETRY FROM THE STANDPOINT OF RIGID MOTIONS.**	**2**			
8	**Algebra**	**17**	**RECOGNIZE, REPRESENT GEOMETRICALLY AND APPLY THE COMMON FORMULAS:**	**8**			• Relate to geometric representation. Use the tangram proof of the Pythagorean theorem and explain its connection with this formula.
			$(a + b)^2 = a^2 + 2ab + b^2$				
			$(a - b)^2 = a^2 - 2ab + b^2$				
			$(a + b)(a - b) = a^2 - b^2$				

Grade	Strand		Standard	Days		Sub Points	Remarks
8	Algebra	18	UNDERSTAND THE CONCEPT OF A NONLINEAR FUNCTION THROUGH EXAMPLES OF SIMPLE FUNCTIONS.	17	a	Example functions should include: i. non linear functions such as y=1/x ii. simple cubic functions, such as $y = x^3$ iii. simple square root functions, such as $f(x) = 5\sqrt{x}$ and iv. exponential functions with an integer base such as $f(n) = 2^n$.	
					b	Understand quadratic functions and their graphs by expressing them in various forms.	
					c	Recognize simple nonlinear functions that arise in problem contexts (e.g., quadratic, cubic, rational, exponential) and represent them using tables, graphs and formulas.	
					d	Recognize graphs of simple quadratic and cubic functions.	
8	Algebra	19	WORK FLUENTLY WITH COMMON NONLINEAR FUNCTIONS.	14	a	Include the following functions that represent relationships between: i. the area and radius of a circle; ii. the volume and radius of a sphere; iii. the number of diagonals and the number of sides of a polygon; iv. the areas of simple plane figures and their linear dimensions; v. the surface areas and volumes of simple three-dimensional solids and their linear dimensions; vi. the value of a bank deposit, the interest rate, compounding period and time elapsed.	
8	Algebra	20	SET UP AND SOLVE SIMULTANEOUS LINEAR EQUATIONS IN TWO VARIABLES.	14	a	Relate to graphs of equations on the Cartesian Plane.	• Emphasize general methods for solutions - NOT GUESS AND CHECK. Guess and check doesn't work very well in general. For example: $2x + 3y = 5$, $y - x = 1$.
							• Use graphing calculators to help students see the situations and check their solutions.

Grade	Strand		Standard	Days		Sub Points	Remarks
8	Algebra	21	SET UP AND SOLVE A LINEAR INEQUALITY IN ONE AND TWO VARIABLES.	9	a	Understand the properties of inequalities.	
8	Algebra	22	TRANSFORM AND GRAPH QUADRATIC FUNCTIONS BY FACTORING.	9	a	For simple quadratics of the form, $f(x) = x^2 - a^2$, determine the equation from the graph.	
8	Algebra	23	SOLVE A QUADRATIC EQUATION BY FACTORING, FINDING WHERE THE GRAPH OF THE FUNCTION MEETS THE x AXIS.	6	a	Relate the solutions of a quadratic to the graph of the corresponding quadratic function.	